

# Data Collection

## Part II

Module 7  
**ESC Cost Core Training**  
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# How to Collect & Analyze Data From

Contracts  
Contractor Proposals  
Cost Reports

# Data From Contracts

- Summary information
- What work is the Contractor required to do?
- What data is the Contractor required to deliver?
- Technical specifications

# Summary Information

- Type of Contract
- Target Cost & Target Price
- Contract Line Item Structure (CLINs)

# What Work Is the Contractor Required to Do?

The Statement of Work  
(SOW)

# What Data is the Contractor Required to Deliver?

## Contract Data Requirements List (CDRL)

- Test Evaluation Master Plan (TEMP)
- Systems Engineering Management Plan (SEMP)
- WBS Dictionary
- CPR, CSSR or CCDR, etc.
- Integrated Master Plan (IMP)
- Integrated Master Schedule (IMS)

# Technical Specifications

- A copy of the preliminary or final specifications is also part of the contract.
  - Type A Specification
  - Type B Specification
  - Type C Specification

# Contract Price Information

- CLIN Prices
- TBDs
- Mapping
- Contract Prices

# Data From Contractor Proposals

- The Procurement Environment
- Exactly What Information From Where
- Labor, Overhead and G&A Rates

# The Procurement Environment

- Competitive
- Sole Source
- Proposal Evaluations

# Exactly What Information From Where

- Contractor WBS
- Subcontracting Plans
- Trend Information

# Labor, Overhead and G&A Rates

- Use only approved rates
- Rates change
  - Changing skill mixes
  - Business base

# Data From Cost Reports

## Primary Cost Reports

- Contractor Funds Status Reports (CFSRs)
- Contractor Cost Data Reports (CCDRs)
- Cost Performance Reports (CPRs)
- Cost/Schedule Status Reports (CSSRs)

# Before Using Any Cost Report Data

- Which contract costs are being reported?
- How many contracts?
- Prime vs. subcontracted
- Which portions of the contract?
- WBS Definitions
- Other terms
- Quantities

# Contract Funds Status Reports (CFSRs)

- A budget report usually ordered on all contracts (other than Firm Fixed Price) valued over \$1,300,000 (FY2000 constant dollars) & a duration longer than 6 months.
- Submitted quarterly.
- Presents funding information such as appropriations, obligations, expenditures, and funding requirements.

# Contract Cost Data Reports (CCDRs)

- Mandatory for all Acquisition Category I (ACAT I) programs, even Firm Fixed Price (FFP) contracts
- ACAT I - CCDR Category I procedures
- ACAT II, III & IV - Category II procedures

# CCDR Formats

- Cost Data Summary Report
- Functional Cost-Hour Report
- Progress Curve Report
- Plant-Wide Data Report

# How Reliable Is CCDR Data?

- Reliable IF VERIFIED
- “Watch Areas”
  - Non-recurring and Recurring Data
  - Functional Labor Categories
  - Standard WBS Terminology

# The Bottom Line on CCDR Data

- Only the Contractor's accounting system is the primary source of data.
- Best time to visit the Contractor's plant is at the start of the contract.

# Cost Performance Reports (CPRs)

- Current period or month information
- Uses Contractor's functional categories
- Includes a Baseline Report
- Includes a Manpower Loading Report

# Cost Performance Reports (CPRs) & Cost/Schedule Status Reports (CSSRs)

- Usually monthly
- Cumulative cost & schedule status information measured by individual WBS element
- Includes a narrative, analyzing the Program status or problems

# Earned Value Management (EVM): CPRs vs. CSSRs

- CPRs are the primary reports required on contracts requiring EVM compliance.
- CSSRs are called out on smaller contracts not specifically requiring EVM compliance.

# 4 Main Types of Information From CPRs & CSSRs

1. Contract costs and schedule performance
2. Actual costs incurred by month, by WBS item, and in total
3. Government Estimates-at-Completion
4. Is the Contractor behind schedule according to the Contractor's own plan?

# Contract Cost and Schedule Performance

## Terminology

- **BCWS** (Budgeted Cost of Work Schedule)
- BCWP (Budgeted Cost of Work Performed)
- ACWP (Actual Cost of Work Performed)

# Contract Cost and Schedule Performance

(cont'd)

## Terminology

- BCWS (Budgeted Cost of Work Schedule)
- **BCWP** (Budgeted Cost of Work Performed)
- **ACWP** (Actual Cost of Work Performed)

# BCWS vs. BCWP vs. ACWP

Cum BCWS = \$400K

Cum BCWP = \$250K

Cum ACWP = \$400K

- Is the Contractor on schedule, behind or ahead?
- Is the Contractor on cost, over cost or under cost?

# Another Example

Cum BCWS = \$500K

Cum BCWP = \$500K

Cum ACWP = \$400K

- Is the Contractor on schedule, behind or ahead?
- Is the Contractor on cost, over cost or under cost?

# Schedule Variance

## BCWS vs. BCWP

On-Schedule	:	BCWS = BCWP
Behind	:	BCWP < BCWS
Ahead	:	BCWP > BCWS

# Cost Variance

## ACWP vs. BCWP

On Cost

:  $ACWP = BCWP$

Over Cost

:  $ACWP > BCWP$

Under Cost

:  $ACWP < BCWP$

# Other Terminology

- BAC
- LRE
- EAC
- Management Reserve

# Budgeted Cost of Work Remaining (BCWR)

. . . is the total planned cost less the planned cost of the work actually performed

$$\text{BCWR} = \text{BAC} - \text{Cum BCWP}$$

# The Importance of Mapping

...when developing an EAC

...if using CPR data in an analogy

...if developing an historical database  
from CPRs

...in obtaining actual contract costs by  
WBS element

# Special “Watch Areas” When Obtaining Data From CPRs & CSSRs

- Mapping of Contractor data into WBS needs to be verified
- EVM acceptance is not sufficient
- Possible noncompliance with EVM criteria
- Unrealistic front-loading of BCWS

# The Best Way to Estimate Cost at Completion

- Be aware of cost and schedule performance to-date
- Problem analysis - how does the Contractor explain the problem?
- Continue to use other methodologies

# The Best Way to Estimate Cost at Completion (continued)

- On initial production contracts
- Adjustments for cost and schedule performance to-date

# EVM Formula-based EAC Concept

$EAC = \text{Cost to Date} + \text{Estimate to Complete}$

$$EAC = ACWP + \left\{ \begin{array}{l} \text{Work Remaining} \\ \text{Performance Factor} \end{array} \right.$$
$$EAC = ACWP + \left\{ \begin{array}{l} \text{BAC - BCWP} \\ \text{Performance Factor} \end{array} \right.$$

# EVM Formula-based EAC Methods Performance Factors

- Cost Performance Index -- CPI
  - Measures cost efficiency
  - $CPI = BCWP/ACWP$
- Schedule Performance Index -- SPI
  - Measures schedule efficiency
  - $SPI = BCWP/BCWS$

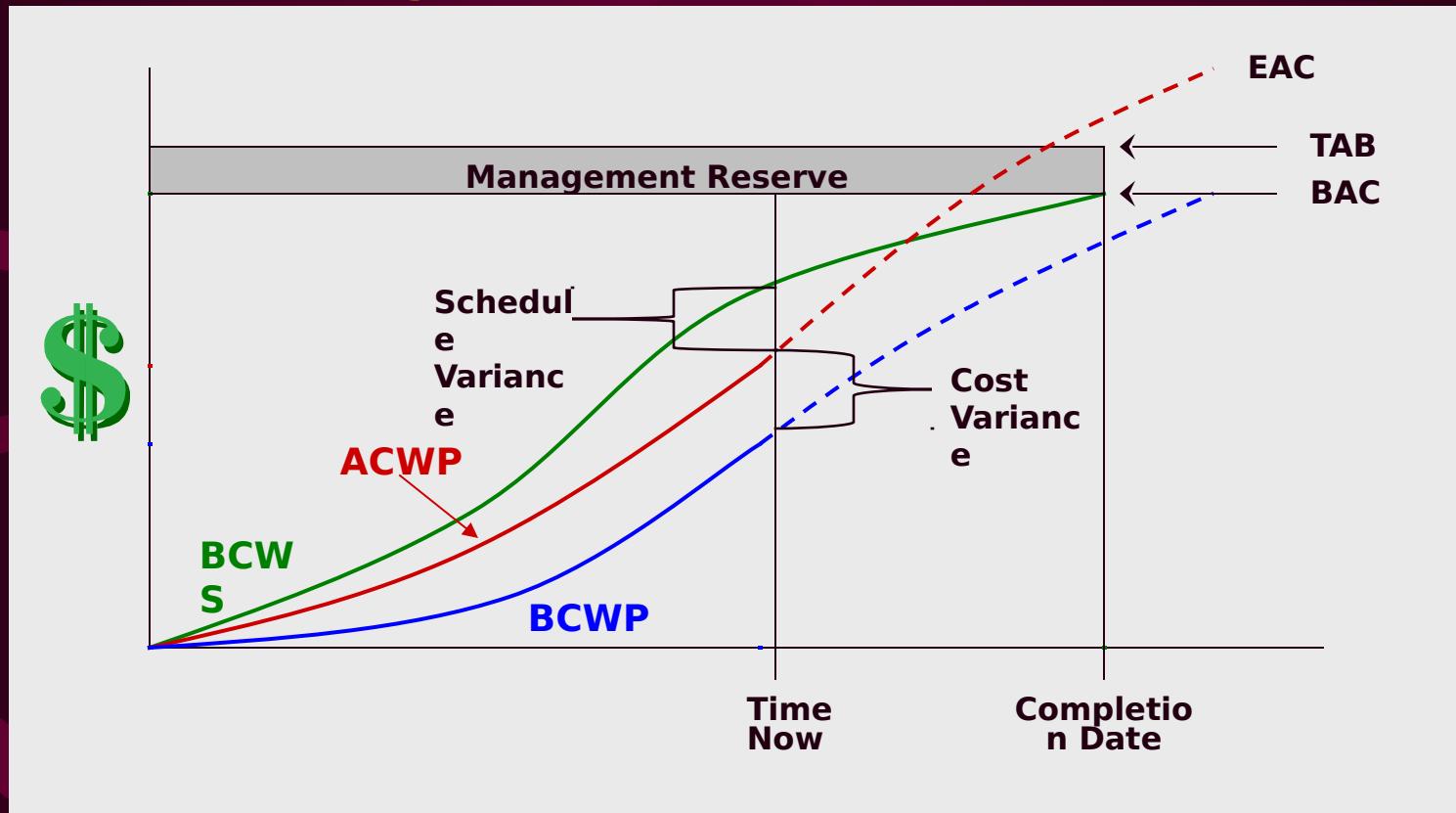
Method	Formula
1. Cum CPI ( $EAC_{CPI_c}$ )	$\frac{ACWP_c + \frac{BAC - BCWP_c}{BAC}}{CPI_c} = CPI_c$
2. Composite EAC	$ACWP_c + \frac{BAC - BCWP_c}{CPI_c \times SPI_c}$
3. 3 Period AVG*	$ACWP_c + \frac{BAC - BCWP_c}{CPI_{3\text{period}}}$
4. Cost & Schedule	$ACWP_c + \frac{BAC - BCWP_c}{.8CPI_c + .2SPI_c}$

**Note:** c = cumulative data

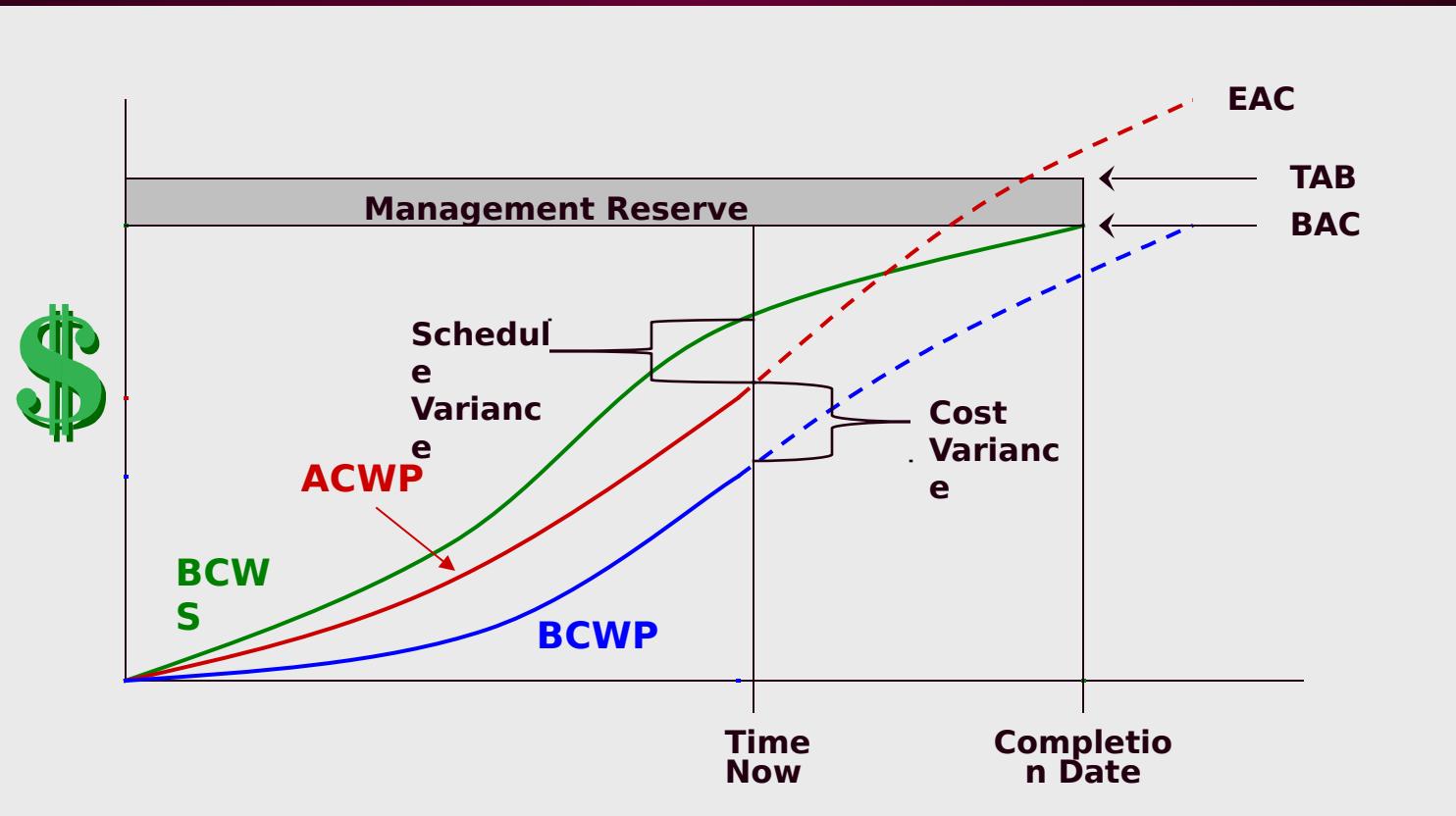
\* "3 Period AVG" is the average of the last 3 months. One can also use Current CPI or 6 period CPI in place of 3 period CPI.

# Defense Systems Management

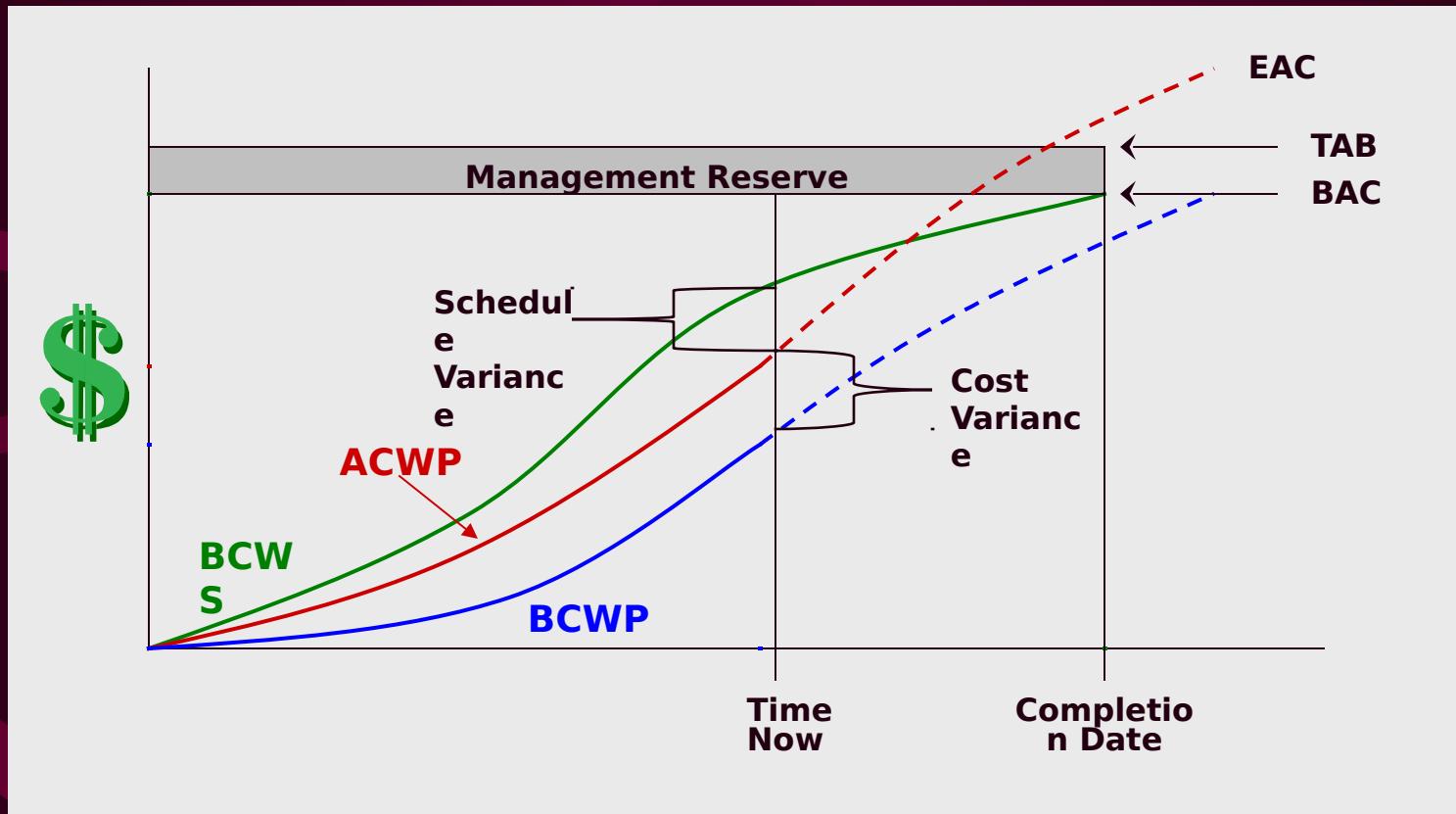
## College Earned Value Management Gold Card



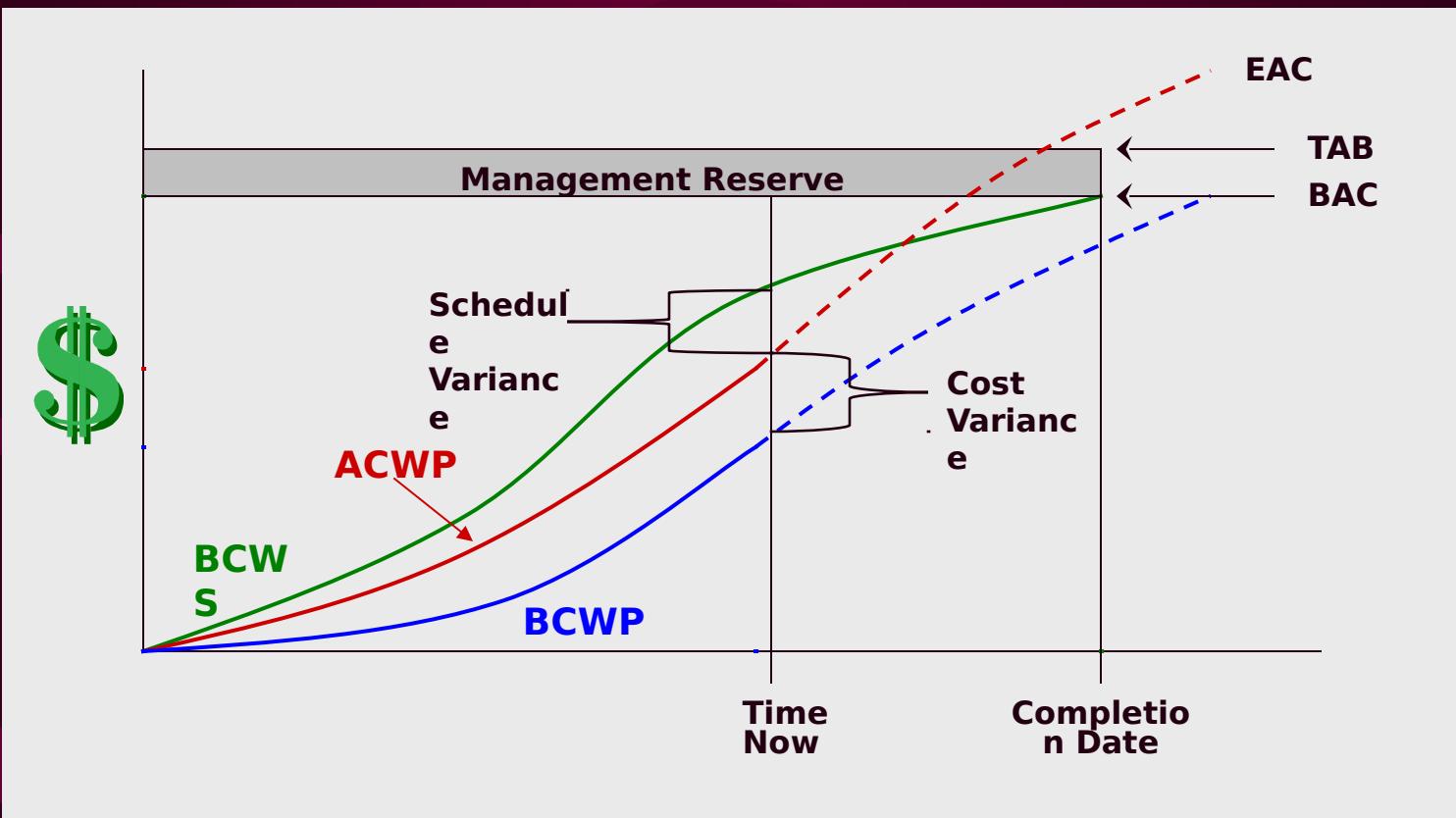
# Variances



# Performance Indices



# Overall Status



# To Complete Performance Index and Estimate at Completion

